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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/134,147	08/14/1998	WALLACE T.Y. TANG	50169/110	7613

32588 7590 03/28/2005

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER

MACARTHUR, SYLVIA

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

LD

Office Action Summary	Application No.	Applicant(s)	
	09/134,147	TANG, WALLACE T.Y.	
	Examiner	Art Unit	
	Sylvia R MacArthur	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on remarks sent.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-19 and 32-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-19 and 32-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 1998 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of: -
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11-13, 16, 18,19, and 33- 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Lustig et al (US 5,433,651)

3. Regarding claim 11: Lustig et al teaches an in-situ endpoint detection and process monitoring for CMP apparatus 50 for planarizing a film on one side of the substrate having two sides, the polisher comprising:

At least one light source 76 that transmits light toward the substrate from the side with the film illuminates at least one section on the film and reflects light off the illuminated section of the film; and at least one device photodetecting elements 80 to receive light from the film on the substrate while the film is being polished, the at least one device being operable to monitor a dimensional change of the film based on the reflected light from the film on the substrate.

Regarding claim 12: The device is positioned on the same side of the substrate as the light source, see Figure 3.

Regarding claim 13: The at least one light source is operable to illuminate such that each monitored section is minimized in size to remove the signal problems.

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Regarding claim 14: The light source of Lustig et al is configured to illuminate only on the section, the section illuminated being dedicated measurement area.

Regarding claim 16: Lustig et al teaches a CMP apparatus planarizing a film on one side of a substrate with two sides the polisher comprising at least one light source and at least one means for receiving the reflected light. The means monitors thickness changes of the film based on the reflected light from the film on the substrate.

Regarding claim 18: The at least one light source 76 is operable to illuminate such that each monitored section is minimized in size to remove the signal problems.

Regarding claim 19: The light source of Lustig et al is configured to illuminate only on the section, the section illuminated being dedicated measurement area, see col. 7 lines 50-64.

Regarding claim 33: Lustig et al teaches HeNe laser 76.

Regarding claim 34: The device is positioned on the same side of the substrate as the light source, see Figure 3.

Regarding claim 35: The light source of Lustig et al is configured to illuminate only on the section, the section illuminated being dedicated measurement area.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 15, 17, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lustig et al in view of Greco et al (US 4,975,141).

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The teachings of Lustig et al were discussed above.

Regarding claim 15: Lustig et al fails to teach that the light source illuminates more than one section.

Greco et al teaches a method for detecting the endpoint in an etching process. The method comprises directing a laser beam to fiducial areas see the paragraph connecting col. 3 and 4.

The motivation to modify the teaching of Lustig et al to illuminate more than one section is to provide more accurate measurement of the endpoint. A plurality of sampling points can be averaged to account for errors due to topography.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the teaching of Lustig et al to illuminate more than one section of the substrate.

Regarding claims 17 and 32: Lustig et al fails to teach that the photodetector 92 is connected to either an interferometer or a spectrometer.

Greco et al teaches a detector 40 monitored by a reflected light interferometer or optical emission spectrometer, see col. 4 lines 1-7.

The motivation to modify the teachings of Lustig et al to connect the photodetector to either an interferometer or a spectrometer is that they are known suitable means of detecting the endpoint of semiconductor manufacturing process.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the teachings of Lustig et al to connect the photodetector to either an interferometer or a spectrometer.

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Response to Arguments

6. Applicant's arguments, filed 5/24/2004, with respect to the rejection(s) of claim(s) 11-19 and 32-35 under 102(b) and 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Lustig et al (JP 02-222533). Lustig et al teaches in-situ or monitoring while polishing occurs as claimed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 9 a.m. and 3 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sylvia R MacArthur
Patent Examiner
Art Unit 1763

March 21, 2005